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Dear Sir:

In accordance with the provisions of 35 U.S.C. 119, Applicant hereby claims the priority
of:

Japanese Patent Application No. 2000 301207 filed August 25, 2000

cited in the Declaration of the present application.

The certified copy is submitted herewith.

Respectfully submitted,

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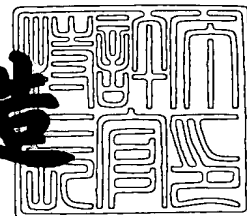
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【発明の名称】 シート部材

【特許請求の範囲】

【請求項 1】 光導電現象によって感光体上に静電潜像を形成し、着色したトナー（帯電微粒子）を静電作用で前記静電潜像に付着させて可視像とする電子写真方式を利用し、前記トナーが形成する可視像が表面に転写されることで、所与の図柄が印刷されたシート部材において、

前記シート部材が、多数の熱可塑性合成樹脂繊維から形成された所与厚みを有する繊維不織布であり、前記トナーが、前記不織布の表面からその厚み方向へ入り込み、前記不織布の表面に位置する前記繊維の周面に付着して該表面に露出する外層部と、前記不織布の内部に位置する前記繊維の周面に付着して前記外層部につながる内層部とを有し、隣接する前記トナーどうしが、互いに混ざり合うことなく、前記不織布に独立した多数のドット状をなして存在していることを特徴とする前記シート部材。

【請求項 2】 前記外層部の厚み寸法が、 $1 \sim 100 \mu\text{m}$ の範囲にある請求項 1 記載のシート部材。

【請求項 3】 前記不織布表面に露出する前記外層部の表面積が、 $10 \sim 100 \mu\text{m}^2$ の範囲にある請求項 1 または請求項 2 に記載のシート部材。

【請求項 4】 前記トナーの外層部から内層部までの厚み方向の寸法が、 $10 \mu\text{m}$ 以上、かつ、前記不織布の厚み以下である請求項 1 ないし請求項 3 いずれかに記載のシート部材。

【請求項 5】 前記シート部材が、透液性トップシートと不透液性バックシートとの間に吸液性コアが介在する使い捨て体液吸収性着用物品の少なくとも前記バックシートに使用されている請求項 1 ないし請求項 4 いずれかに記載のシート部材。

【発明の詳細な説明】

【0001】

【発明の属する技術分野】

本発明は、電子写真方式を利用して、所与の図柄が印刷されたシート部材に関

する。

【 0 0 0 2 】

【従来の技術】

特開 2 0 0 0 - 2 6 6 号公報は、外部から認識可能な図柄がインクジェット方式によってシート部材の表面に印刷された体液吸収性着用物品を開示している。この物品では、グラビア印刷やフレキソ印刷のように製版された印刷ロールを必要とせず、インクジェット方式を採用するプリンタやプロッター等によってシート部材に多種の図柄を短時間に印刷することができる。

【 0 0 0 3 】

【発明が解決しようとする課題】

インクジェット方式では、シート部材の表面に対するカラーブリーディングを防ぐために、液状の超浸透インキを使用することが一般的である。同号公報に開示の着用物品では、シート部材の一例として多数の熱可塑性合成樹脂から形成された繊維不織布を使用し、前記不織布にインクジェット方式によって図柄を印刷したものが記載されている。しかし、前記不織布に超浸透インキを使用すると、インキが不織布の表面からその内部に滲入、拡散し、インキがにじんで図柄が不鮮明になったり、インキどうしが混ざり合って色調に狂いが生じてしまうことがある。

【 0 0 0 4 】

本発明の課題は、色調に狂いがなく、鮮明な図柄が印刷されたシート部材を提供することにある。

【 0 0 0 5 】

【課題を解決するための手段】

前述した課題を解決するための本発明の前提は、光導電現象によって感光体上に静電潜像を形成し、着色したトナー（帯電微粒子）を静電作用で前記静電潜像に付着させて可視像とする電子写真方式を利用し、前記トナーが形成する可視像が表面に転写されることで、所与の図柄が印刷されたシート部材である。

【 0 0 0 6 】

かかる前提において本発明の特徴は、前記シート部材が、多数の熱可塑性合成

樹脂繊維から形成された所与厚みを有する繊維不織布であり、前記トナーが、前記不織布の表面からその厚み方向へ入り込み、前記不織布の表面に位置する前記繊維の周面に付着して該表面に露出する外層部と、前記不織布の内部に位置する前記繊維の周面に付着して前記外層部につながる内層部とを有し、隣接する前記トナーどうしが、互いに混ざり合うことなく、前記不織布に独立した多数のドット状をなして存在していることにある。

【0007】

本発明の実施の態様の一例としては、前記外層部の厚み寸法が、 $1 \sim 100 \mu\text{m}$ の範囲にある。

【0008】

本発明の実施の態様の他の一例としては、前記不織布表面に露出する前記外層部の表面積が、 $10 \sim 100 \mu\text{m}^2$ の範囲にある。

【0009】

本発明の実施の態様の他の一例としては、前記トナーの外層部から内層部までの厚み方向の寸法が、 $10 \mu\text{m}$ 以上、かつ、前記不織布の厚み以下である。

【0010】

本発明の実施の態様の他の一例としては、前記シート部材が、透液性トップシートと不透液性バックシートとの間に吸液性コアが介在する使い捨て体液吸収性着用物品の少なくとも前記バックシートに使用されている。

【0011】

【発明の実施の形態】

添付の図面を参照し、本発明に係るシート部材の詳細を説明すると、以下のとおりである。

【0012】

図1、2は、シート部材1の斜視図と、図1のシート部材1の拡大図とであり、図3は、図2のA-A線切断面図である。シート部材1には、後記する電子写真方式を利用することによって図柄3（紙に包装された多数の飴）が印刷されている。図柄3は、シート部材に付着するトナー4によって画成されている。

【0013】

シート部材 1 は、多数の熱可塑性合成樹脂繊維から形成された繊維不織布 2 であり、所与の厚みを有する。不織布 2 としては、спанレース、ニードルパンチ、の各製法により製造され、繊維どうしが機械的に交絡する不織布、または、メルトブローン、サーマルボンド、спанボンド、ケミカルボンド、エアースルー、の各製法により製造され、繊維どうしが交絡点で互いに熱融着や接着剤で結合している不織布を使用することができる。

【 0 0 1 4 】

また、不織布 2 としては、高い耐水性を有するメルトブローン法による不織布を、高い強度を有しかつ柔軟性に富んだспанボンド法による不織布で挟んだ複合不織布を使用することもできる。

【 0 0 1 5 】

不織布 2 の構成繊維としては、ポリオレフィン系、ポリエステル系、ポリアミド系、の各繊維、ポリエチレン／ポリプロピレンまたはポリエステルからなる芯鞘型複合繊維やサドバイサイド型複合繊維を使用することができる。

【 0 0 1 6 】

不織布 2 では、印刷を容易にするため、その表面にコロナ放電やプラズマ放電による処理を施し、不織布 2 表面の濡れ指数を 40 dyn/cm 以上にしたり、樹脂プライマーを不織布 2 の表面に塗布することが好ましい。

【 0 0 1 7 】

トナー 4 は、不織布 2 の表面からその厚み方向へ入り込み、不織布 2 の表面に位置する繊維 2 a に付着して、不織布 2 の表面に露出する外層部 4 a と、不織布 2 の内部に位置する繊維 2 b に付着して、外層部 4 a につながる内層部 4 b とを有する。トナー 4 は、互いに隣接するそれらトナー 4 どうしが互いに混ざり合うことなく、不織布 2 に独立する多数のドット状をなして存在している。

【 0 0 1 8 】

トナー 4 は、それが不織布 2 の表面から内部に入り込んだとしても、不織布 2 の内部にしみこんでしまったり、不織布 2 の内部で拡散したりすることはないので、トナー 4 がにじんで図柄が不鮮明になることはなく、トナー 4 どうしが混ざり合って色調に狂いが生じてしまうこともない。

【 0 0 1 9 】

トナー 4 の外層部 4 a は、 $1 \sim 100 \mu\text{m}$ の厚み寸法を有する。外層部 4 a では、その厚み寸法 L_1 が $1 \sim 10 \mu\text{m}$ の範囲にあることが好ましい。外層部 4 a の厚み寸法 L_1 が $1 \mu\text{m}$ 未満の場合では、外層部 4 a において光の乱反射が起こり難く、視線の入力角度によって外層部 4 a の色調が大きく変化してしまう。外層部 4 a の色調が変化すると、不織布 2 の表面での光の反射に基づく表面色がぼやけて図柄 3 が不鮮明になることがある。外層部 4 a の厚み寸法 L_1 が $100 \mu\text{m}$ を超過する場合は、トナー 4 の堅牢度にもよるが、トナー 4 の外層部 4 a が潰れ易く、外層部 4 a が潰れると、外層部 4 a において光の乱反射が起こり難くになってしまう。

【 0 0 2 0 】

トナー 4 では、不織布 2 の表面に露出する外層部 4 a の表面積が $10 \sim 100 \mu\text{m}^2$ の範囲にある。外層部 4 a の表面積が $10 \mu\text{m}^2$ 未満の場合では、外層部 4 a の厚み寸法 L_1 が $1 \mu\text{m}$ 未満の場合と同様に、外層部 4 a において光の乱反射が起こり難く、表面色がぼやけて図柄 3 が不鮮明になることがある。外層部 4 a の表面積が $100 \mu\text{m}^2$ を超過する場合は、不織布 2 の表面における解像度が低下し、図柄 3 の細部を鮮明に表すことができない。なお、不織布 2 の表面における解像度は、 $400 \times 400 \text{ dpi} \sim 2, 400 \times 1, 200 \text{ dpi}$ の範囲で調節することができる。

【 0 0 2 1 】

トナー 4 では、外層部 4 a から内層部 4 b までの厚み方向の寸法 L_2 が、 $10 \mu\text{m}$ 以上、かつ、不織布 2 の厚み以下である。厚み寸法 L_2 が $10 \mu\text{m}$ 未満の場合では、内層部 4 b において光の乱反射が起こり難く、視線の入力角度によって内層部 4 b の色調が大きく変化してしまう。内層部 4 b の色調が変化すると、不織布 2 内部での光の吸収に基づく透過色がぼやけて図柄 3 が不鮮明になることがある。

【 0 0 2 2 】

トナー 4 としては、液体トナーを使用することができる。液体トナーとしては、バインダ樹脂、トナーに色を付ける着色剤、イソパラフィン系の有機溶媒から

なる絶縁性液体、トナーに極性を付与する電荷調整剤、を適宜の割合で混合したものを使用することができる。着色剤としては、カーボンプラック、C. I. Pigment Yellow 12、C. I. Pigment Red 48、C. I. Pigment Blue 15等の顔料を使用することができる。フルカラー印刷では、イエロー、マゼンタ、シアン、のカラートナーを重ね合わせることによって多彩な色を表現することができる。トナー4としては、液体トナーの他に、粉体トナーを使用することもできる。

【0023】

図4は、一例として示す電子写真方式の説明図であり、感光ドラム11の回転方向を矢印Xで示し、シート部材1の移動方向を矢印Yで示す。電子写真方式は、帯電、露光、現像、転写、クリーニング、の各工程から構成され、光導電現象によって感光ドラム11の周面に静電潜像を形成し、着色したトナー4（帯電微粒子）を静電作用で静電潜像に付着させて可視像とし、トナー4が形成する可視像をシート部材1の表面に転写させるものである。

【0024】

帯電は、帯電器10からのコロナ放電によって、感光ドラム11の周面を正のイオンに均一に帯電させる工程である。露光は、露光器12によって原稿からの反射光を感光ドラム11の周面に当て、画像部以外の帯電を消去して画像部の帯電だけを残す工程（複写機の場合）。または、露光器12によって画像部に相当する部分にレーザ光やLEDによる光を当て、画像部の帯電を消去する工程（プリンタの場合）である。露光によって感光ドラム11の周面に静電潜像が形成される。

【0025】

現像は、静電作用を利用し、負の電荷に帯電させたトナー4を現像器13から感光ドラム11周面の静電潜像に付着させ、可視像とする工程である。現像器13の下部には、感光ドラム11の周面に接触するドラム状のデベロッパー14が配置されている。

【0026】

転写は、感光ドラム11の周面に接触する転写ロール15によって、トナー4

が形成する可視像をシート部材 1 に転写する工程である。その一例としては、トナー 4 とは逆極性の正の電荷をシート部材 1 に帯電させ、トナー 4 を転写ロール 1 5 の周面からシート部材 1 に移動させる静電転写方式がある。転写ロール 1 5 の下部には、インプレッションドラム 1 6 が配置されている。インプレッションドラム 1 6 は、シート部材 1 を転写ロール 1 4 の周面に押し当てるためのものである。

【 0 0 2 7 】

クリーニングは、感光ドラム 1 1 の周面に残留しているトナー 4 を除去する工程である。その一例としては、除電器 1 7 によって感光ドラム 1 1 周面の帯電を消去し、ウレタンゴムブレードを有するクリーナ 1 8 を感光ドラム 1 1 の周面に接触させるブレードクリーニング方式がある。

【 0 0 2 8 】

図 5 は、電子写真方式によって図柄 3 が印刷された不織布 2 を使用した使い捨ておむつ 2 0 の斜視図である。おむつ 2 0 は、透液性トップシート 2 1 と、不透液性バックシート 2 2 と、トップシート 2 1 とバックシート 2 2 との間に介在し、表面全域が透水性のティッシュペーパーに被覆、接合された吸液性コア 2 3 とを主要な構成部材とする。コア 2 3 は、ティッシュペーパーを介してトップシート 2 1 とバックシート 2 2 との少なくとも一方に接合されている。おむつ 2 0 では、上記電子写真方式によって図柄 3 が印刷された不織布 2 をバックシート 2 2 に使用している。

【 0 0 2 9 】

おむつ 2 0 は、縦方向に前胴周り域 2 4 と、後胴周り域 2 6 と、前後胴周り域 2 4、2 6 の間に位置する股下域 2 5 とを備え、合掌状に重なり合う前後胴周り域 2 4、2 6 の両側縁部が固着され、胴周り開口 2 7 と、一対の脚周り開口 2 8 とが画成されている。

【 0 0 3 0 】

胴周り開口 2 7 の縁部には、胴周り方向へ延びる複数条の胴周り用弾性伸縮性部材 2 9 が伸長状態に取り付けられている。脚周り開口 2 8 の縁部には、脚周り方向へ延びる複数条の脚周り用弾性伸縮性部材 3 0 が伸長状態に取り付けられて

いる。

【0031】

おむつ20では、それを着用した着用者の動作によってバックシート22が湾曲して図柄3に対する視線の入力角度が変化しても、トナー4の外層部4aと内層部4bとにおいて光の乱反射が起こるので、外層部4aと内層部4bとにおける色調の変化が少なく、視線の入力角度の変化に対して図柄3が不鮮明になることはない。

【0032】

表面シート21には、親水性不織布や開孔プラスチックフィルム等の透液性のシートを使用することができる。裏面シート22には、疎水性不織布、疎水性不織布に不透液性のプラスチックフィルムを重ね合わせたラミネートシートを使用することができる。

【0033】

コア23は、フラッフパルプと高吸収性ポリマー粒子と熱可塑性合成樹脂繊維の混合物であり、所要の厚みに圧縮されている。高吸収性ポリマーとしては、デンプン系、セルロース系、合成ポリマー系のものを使用することができる。

【0034】

シート21、22どうしの固着やコア23の接合、弾性部材29、30の固着には、ホットメルト系の接着剤、または、ヒートシールやソニックシール等の熱溶着の手段を利用することができる。

【0035】

図6は、電子写真方式によって図柄3が印刷された不織布2を使用したパッケージ30の斜視図である。パッケージ30の側面には、図5のおむつ20と同様の図柄3が印刷されている。パッケージ30の内部には、多数のおむつ20が折り畳まれた状態で収納されている。

【0036】

このシート部材1は、使い捨ておむつの他に、おむつかバー、トレーニングパンツ、失禁パンツ、生理用ナプキン等の体液吸収性着用物品のシートとしても使用することができる。

【 0 0 3 7 】

【発明の効果】

本発明に係るシート部材によれば、シート部材として不織布を使用し、電子写真方式を利用して不織布に所与の図柄が印刷されており、トナーが不織布の表面からその内部に入り込んだとしても、不織布の内部にしみこんでしまったり、不織布の内部で拡散したりすることはないので、トナーがにじんで図柄が不鮮明になることはなく、トナーどうしが混ざり合って色調に狂いが生じてしまうこともない。

【 0 0 3 8 】

シート部材では、外層部の厚み寸法が $1 \sim 100 \mu\text{m}$ の範囲、かつ、不織布の表面に露出する外層部の表面積が $10 \sim 100 \mu\text{m}^2$ の範囲にあるので、外層部において光の乱反射が起こり、視線の入力角度が変化しても外層部における色調の変化が少ない。また、シート部材では、トナーの外層部から内層部までの厚み方向の寸法が、 $10 \mu\text{m}$ 以上、かつ、不織布の厚み以下にあるので、内層部において光の乱反射が起こり、視線の入力角度が変化しても内層部における色調の変化が少ない。ゆえに、シート部材では、視線の入力角度の変化にかかわらず、図柄を鮮明に見ることができる。

【 0 0 3 9 】

このシート部材を使い捨て体液吸収性着用物品のバックシートに使用した場合には、バックシートが湾曲して図柄に対する視線の入力角度が変化しても、トナーの外層部と内層部とにおいて光の乱反射が起こるので、外層部と内層部とにおける色調の変化が少ない。ゆえに、物品では、視線の入力角度の変化にかかわらず、バックシートに印刷された図柄を鮮明に見ることができる。

【図面の簡単な説明】

【図 1】

シート部材の斜視図。

【図 2】

図 1 のシート部材の拡大図。

【図 3】

図 2 の A - A 線切断面図。

【図 4】

一例として示す電子写真方式の説明図。

【図 5】

図柄が印刷された不織布を使用した使い捨ておむつの斜視図。

【図 6】

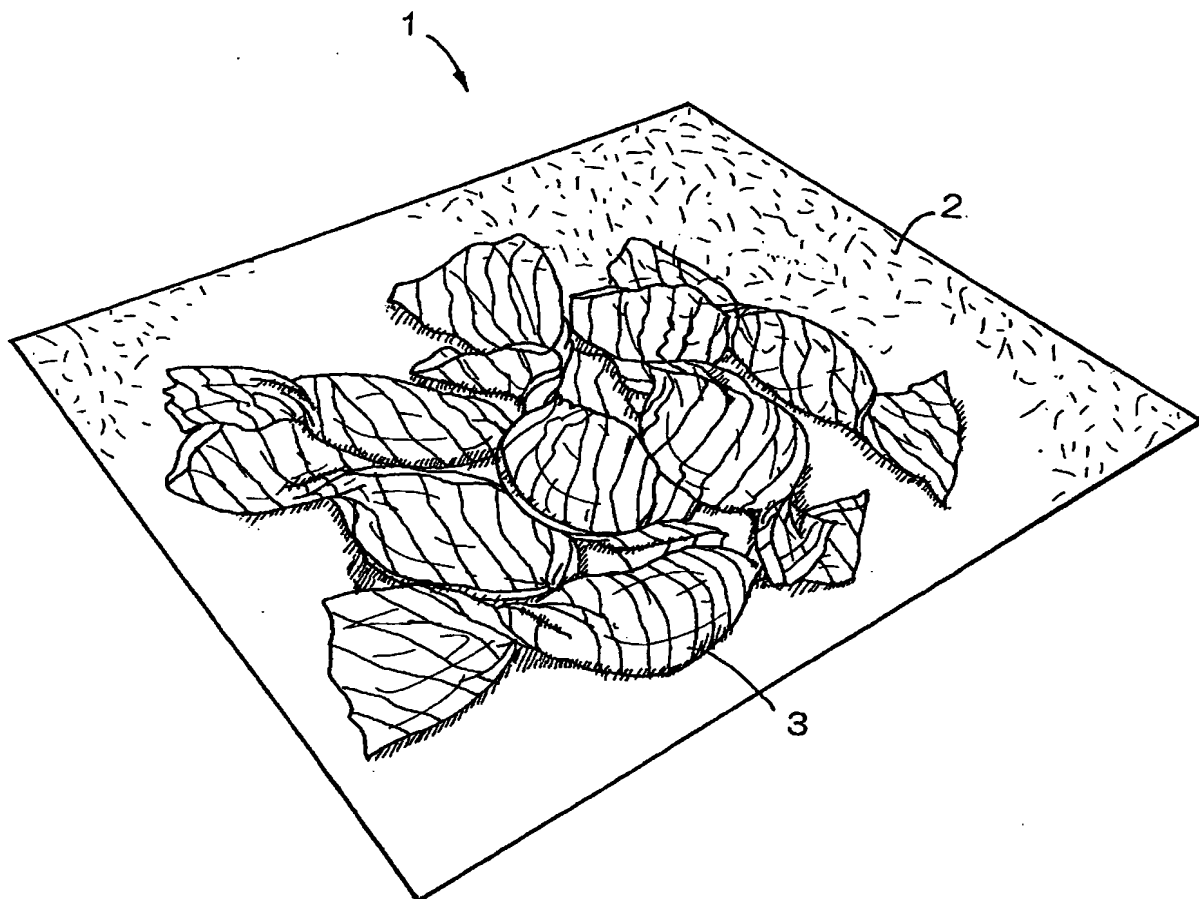
図柄が印刷された不織布を使用したパッケージの斜視図。

【符号の説明】

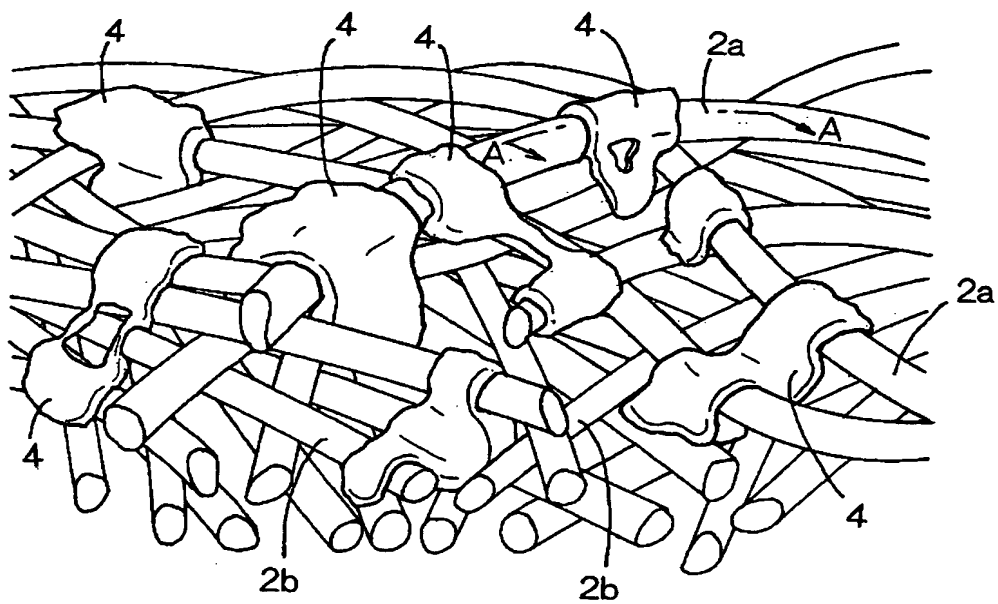
1	シート部材
2	繊維不織布
2 a	繊維
2 b	繊維
3	図柄
4	トナー（帯電微粒子）
4 a	外層部
4 b	内層部
2 0	使い捨ておむつ（使い捨て体液吸収性着用物品）
2 1	透液性トップシート
2 2	不透液性バックシート
2 3	吸液性コア
L 1	寸法
L 2	寸法

【書類名】 図面

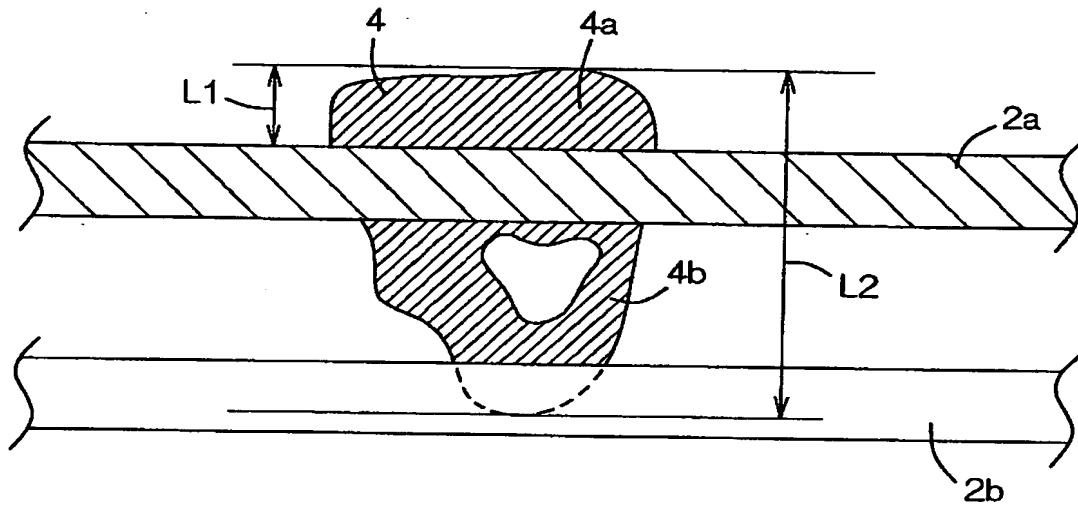
【図 1】



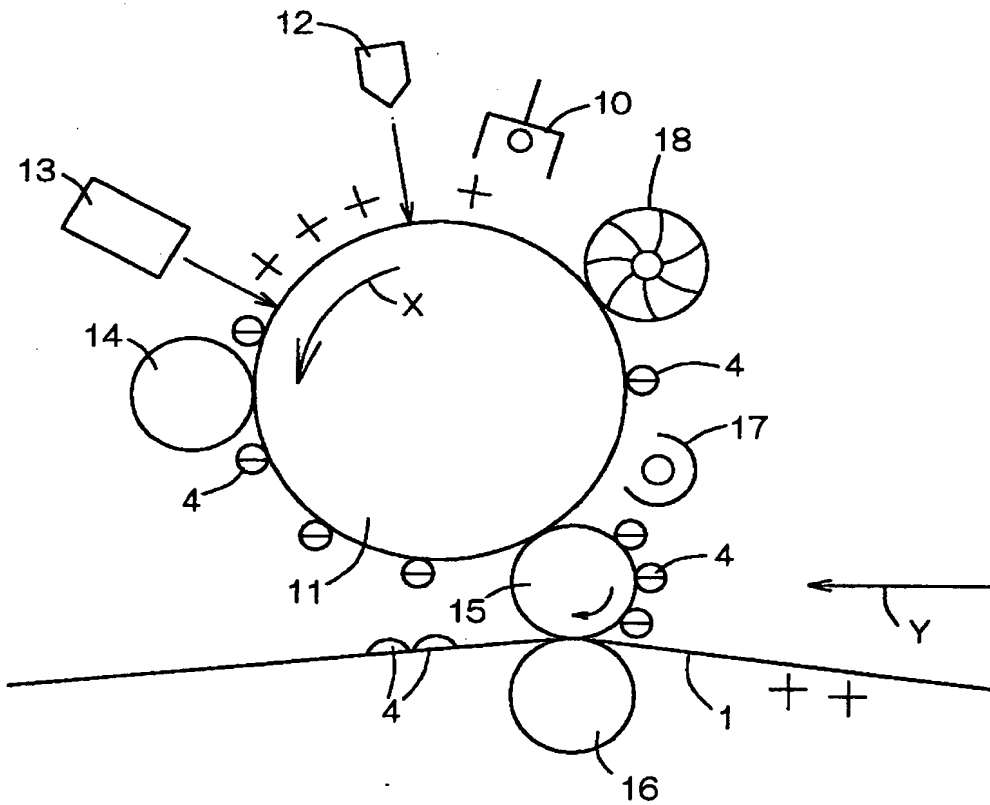
【図 2】



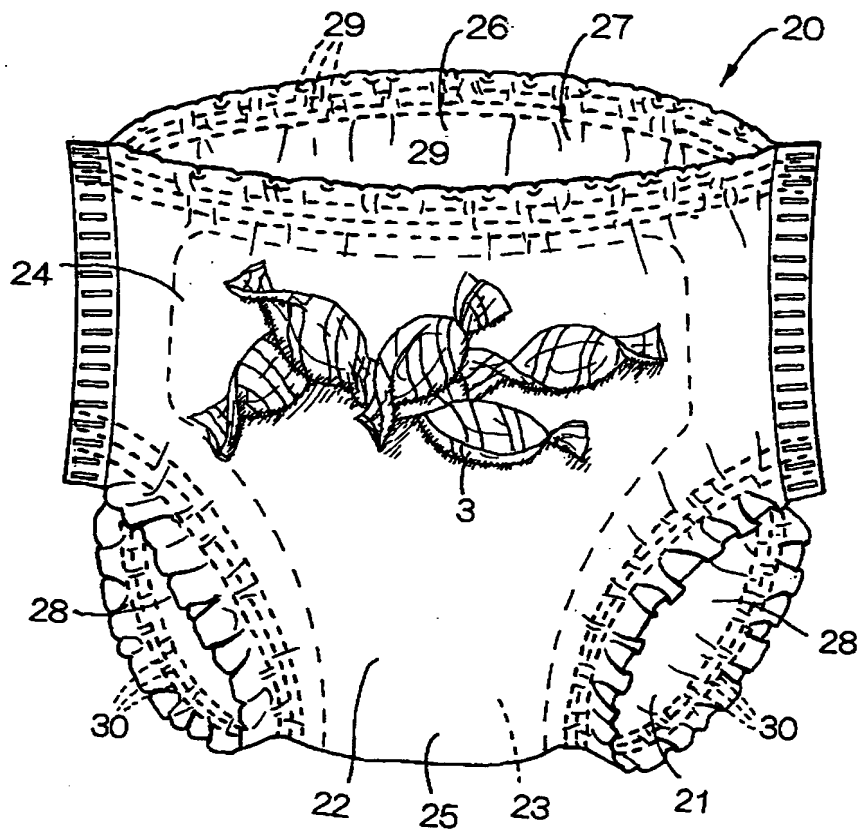
【図 3】



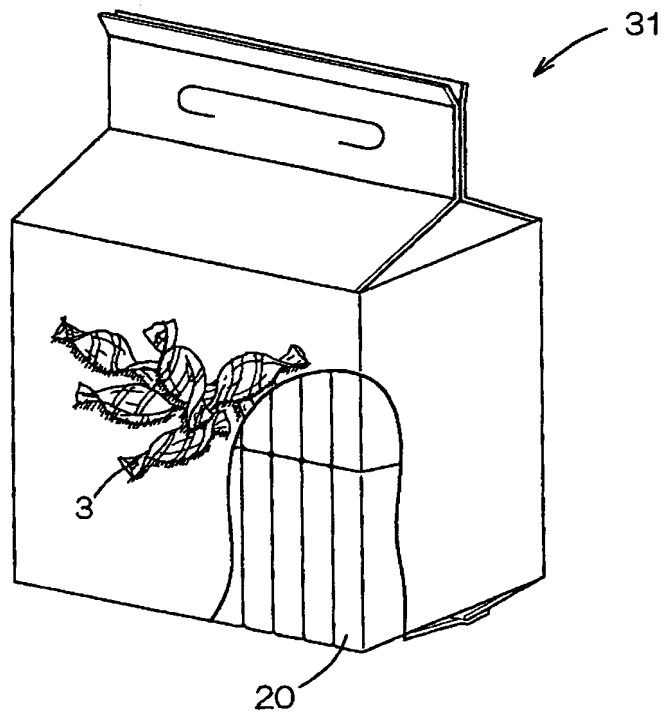
【図 4】



【図 5】



【図 6】



【書類名】 要約書

【要約】

【課題】 色調に狂いがなく、鮮明な図柄が印刷されたシート部材を提供する。

【解決手段】 電子写真方式を利用し、所与の図柄 3 が印刷されたシート部材 1 が、所与厚みを有する繊維不織布 2 であり、トナーが、不織布 2 の表面からその厚み方向へ入り込み、不織布 2 表面の繊維の周面に付着する外層部と、不織布 2 内部の繊維の周面に付着する内層部とを有し、隣接するトナーどうしが、互いに混ざり合うことなく、不織布 2 に独立した多数のドット状をなして存在している。

【選択図】 図 1

出 願 人 履 歴 情 報

識別番号 [000115108]

1. 変更年月日 1990年 8月24日

[変更理由] 新規登録

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2. **** shows the word which can not be translated.
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DETAILED DESCRIPTION

[Detailed Description of the Invention]

[0001]

[The technical field to which invention belongs] this invention relates to the absorptivity wear goods printed by the printing method of giving a printing pattern to the member of absorptivity wear goods, and this printing method in the manufacturing process of absorptivity wear goods.

[0002]

[Description of the Prior Art] The top sheet of liquid permeability [goods / former and absorptivity wear], and the backseat of liquid impermeability, It has the absorber arranged among both [these] sheets, and excrement, such as urine excreted at the time of wear, is mainly held with an absorber through the top sheet of liquid permeability. by the backseat of liquid impermeability It is used as that which prevents excrement beginning to leak out of absorptivity wear goods, and it has a flexible elastic member and a fastener for fixation, and the thing of various gestalten, such as being beforehand formed in the trousers type so that it may use according to the use and can be used as absorptivity wear goods of ****, is devised.

[0003] As the above-mentioned absorptivity wear goods, the usage **** diaper the usage **** diaper for infants, the object for adult's incontinentia persons, or for persons requiring care is devised, and it is used widely.

[0004] It adds to the operation which holds original excrement for goods itself on these absorptivity wear goods. Although shut up in goods the means and excrement which make a wearer do wear fixation of the goods, a means by which displeasure is not given to a wearer, and a means to make it excrement not begin to leak out of goods possess, these means act effectively and goods are constituted For example, when wearing himself the aforementioned absorptivity wear goods with which the small child was formed in the trousers type, or when a care worker makes it wear to an adult, it is also necessary to have the means which makes distinction of the front reverse side easy before and after wear nature goods.

[0005] Moreover, it will become a required function if establishing a pattern pattern which the size display which can be distinguished, and infants like at a glance if it doubles when these absorptivity wear goods also have the need of using that from which size differed according to a wearer's habitus, especially the usage **** diaper for infants is considered also considers the simple nature at the time of use, and the amenity.

[0006] For this reason, the pattern pattern which infants, such as an animal and a vehicle, like is beforehand printed to the backseat of liquid impermeability, or the fastener for fixation, or arranging a pattern pattern in specific positions, such as a backseat, for the purpose, such as distinction of the front reverse side, in for a product brand name, product size, and infants is widely performed so that recognition may become possible from the outside of absorptivity wear goods conventionally.

[0007] however, the thing which, as for printing of a pattern pattern etc., the assembler of absorptivity wear goods is made by printing a pattern pattern beforehand to individual material, such as a backseat which forms [in / a front process / more] absorptivity wear goods, and a fastener, and the printing means against such material generally performs for flexographic printing, gravure, etc. -- it is carried out

[0008]

[Problem(s) to be Solved by the Invention] Since flexographic printing currently performed from the former and gravure are performed by the engraved printing roll to the material of each part material which constitutes absorptivity wear goods, they cannot but become what the pattern pattern of the limited kind followed at the fixed interval. That is, since a limit is in the outer-diameter size of a printing roll, thereby, the kind of pattern pattern of absorptivity wear goods that the kind of pattern pattern which can be continuously printed into the material of a predetermined member is a limit, and at most 4-5 kinds can put it in into 1 packing unit for shipment is also restricted. Moreover, since set like (assembler, and rewind continuously) and the material of each part material which constitutes the absorptivity wear goods generally rolled round in the shape of [finishing / printing] a roll, they are supplied from a feeder, it ****s to predetermined length through an adhesion assembly and goods are manufactured in case absorptivity wear goods are assembled and manufactured, it is difficult to arrange a pattern pattern in the specific position of these members in a finished product. And since it becomes impossible to use as a material of the goods of size which is different even if material width of face was the same when describing the character of product size in material, when carrying out size **** (change to manufacture of the product with which sizes differ) in the middle of manufacture, un-arranging arises and efficient manufacture becomes impossible.

[0009] this invention solves the above problems and sets them to manufacture of absorptivity wear goods. It enables it to increase the kind of printing pattern given to absorptivity wear goods, and to print a printing pattern easily in the specific position of absorptivity wear goods. printing the distinction sign (pattern) which was not being printed conventionally -- further

It realizes enabling it to change a printing pattern easily with the form in the middle of manufacture, or change of size etc., and let not only raising the simple nature and the degree of visual satisfaction at the time of a user's use but improvement in productive efficiency be the purpose. In manufacture of absorptivity wear goods, this invention person finds out giving the printing pattern which can be recognized from superficies by ink-jet printing at the time of wear, and came to complete this invention.

[0010]

[Means for Solving the Problem] It is the printing method for manufacture of the absorptivity wear goods with which it comes to have the top sheet of the 1st liquid permeability of this invention, the backseat of liquid impermeability, and the absorber arranged among both [these] sheets, and the printing pattern which can be recognized from the exterior is given at the time of wear, and is the printing method of the absorptivity wear goods characterized by to give this printing pattern by ink-jet printing to a predetermined material of these absorptivity wear goods. In addition, the phrase of the printing pattern in this invention means the content of printing at large [such as a pattern pattern, a sign, and a character,].

[0011] The absorptivity wear goods of the 1st invention have composition which has arranged one or more layers of outer layer sheets which consist of a nonwoven fabric etc. on the outside of a backseat, and the 2nd of this invention is the printing method of the absorptivity wear goods indicated to the 1st invention characterized by giving the printing pattern which can be recognized from the exterior to the at least 1st of the pages on this backseat and this rear face of an outer layer sheet table by ink-jet printing at the time of wear. That is, a printing pattern may be printed into the material of a backseat and may be printed to the at least 1st of the pages on the rear face of front of the charge of an outer layer web material which consists of one or more layers.

Moreover, when it prints to any 2nd [or more] page, by using an outer layer sheet as translucent material, it becomes discriminable [each printing pattern], and a separate printing pattern is printed to each field, or it also becomes possible to pile up each printing pattern and to consider as one pattern. Moreover, an outer layer sheet also carries out work of protection of a printing side by printing inside the superficies of an outermost-layer-of-drum sheet.

[0012] The 3rd of this invention is the printing method of the absorptivity wear goods indicated to the 1st invention characterized by setting and giving like the assembler who assembles and goes, or the 2nd invention, rewinding continuously each part material which constitutes absorptivity wear goods for the aforementioned ink-jet printing to a predetermined member. By setting and giving like an assembler, it becomes possible to print in the positions where a member is arbitrary.

[0013] They are the absorptivity wear goods with which printing characterized by to be given by ink-jet printing was given to the printing pattern which can be recognized from the exterior to the 1st [at least] page of the member arranged in the position which can be recognized from the exterior of absorptivity wear goods at the time of wear in the absorptivity wear goods which have the top sheet of the 4th liquid permeability of this invention, the backseat of liquid impermeability, and the absorber arranged among both [these] sheets. That is, when a printing pattern is printed by the field of the member arranged in the position which can be recognized from the exterior of absorptivity wear goods at the time of wear, and a backseat is translucent or prepares a translucent outer layer sheet in the outside of a backseat further, printing may be given to two or more members and printing may be given to both sides of a member.

[0014]

[Embodiments of the Invention] According to the absorptivity wear goods of this invention, the printing pattern which can be recognized from superficies at the time of wear is given by ink-jet printing. Since ink-jet printing does not need the printing roll engraved like the conventional gravure or flexographic printing, The pattern pattern according to a product brand name, product size, the usage of a product, and a wearer's taste etc. is theoretically printed by the infinite pattern to the material which forms absorptivity wear goods, and it becomes possible to raise the simple nature at the time of use, and the amenity. That is, although there are at most 4-5 kinds of pattern pattern which can be continuously printed into a predetermined material even if it is going to increase the kind of pattern pattern since the engraved printing roll is used in gravure or flexographic printing and a limit is in the outer-diameter size of a printing roll In ink-jet printing, since a pattern pattern can be changed for every time, it becomes possible to increase the kind of pattern pattern sharply.

[0015] Under the present circumstances, if ink-jet printing is given to the member which the assembler who assembles and goes sets for (it to also be called an assembly process), rewinding each material of absorptivity wear goods, and is made into the purpose, it will become easy to arrange a printing pattern to the predetermined part in absorptivity wear goods, and this position will become possible [setting up arbitrarily] further. Therefore, it becomes possible to clarify distinction of the front reverse side or to give a pattern that it becomes the standard of fixed positions, such as an adhesive tape for fixing absorptivity wear goods to a wearer's body, approximately at the time of wear.

[0016] Moreover, by setting and giving ink JIETO printing like the assembler of each material who manufactures absorptivity wear goods Since it becomes possible to give a printing pattern to the position of material by arranging the print head in the required position at the time of the material which needs printing flowing, and printing at a required interval Unlike the case where material printed beforehand is rewound, assembled and carried out, application of material is not limited by the printing pattern which change of a printing pattern or the printing position is easy, and needs.

[0017] Furthermore, process printing becomes possible by printing the printing pattern of a color which assembles two or more print heads from which the color of ink differs, arranges along with the flow direction of the material of a process, and is different in the same member, or printing and laying the printing pattern of a color different, respectively on top of a separate member. Moreover, printing in a large area is also attained by arranging two or more print heads along a direction perpendicular to the flow direction of material.

[0018] Thus, it is setting ink-jet printing like the assembler of absorptivity wear goods, and printing a pattern pattern required for

a required part to the material which is not printed, and although the effect can demonstrate more greatly, this is because it has the property that it sets like the assembler of absorptivity wear goods, and it can print easily since ink-jet printing does not need the printing roll with which it was engraved unlike gravure or flexographic printing. Moreover, although it prints beforehand by ink-jet printing to material, and an assembly can also perform like an assembler like the conventional method, adjusting so that this printing pattern may be arranged in the specific position of absorptivity wear goods when it is the purpose to only increase the kind of pattern pattern, in order to carry out the purpose of this invention effectively, it is the best method to consider as the online printing method which assembles and prints by being in process.

[0019] Next, in the manufacturing process of the absorptivity wear goods in this invention, online ** ** ink-jet printing is given, and an example of the concrete method which manufactures absorptivity wear goods is described below. It sets like an assembler and each part material (material) which constitutes the absorptivity wear goods rolled round in the shape of a roll is rewound, a required printing pattern is given by the print head installed on the material after rewinding to a printed material among such material, and a predetermined printing pattern is arranged at the position of the completed absorptivity wear goods. Although it is important for such printed material that a printing pattern is arranged mutually at a position when a bird clapper gives a printing pattern to two or more ****, especially translucent printed material as two or more, and it piles up, and completed By starting printing in the printing method of this invention according to phases, such as a cutter rotor (Rota of the cutter which cuts out the absorptivity wear goods of a continuum) used as criteria Since the position printed arbitrarily can be set up to each printed material, the printing position between printed material can also be set up easily.

[0020] Subsequently, an assembly is carried out to firm attachment material, such as material of the absorber which is the other materials, material of a flexible elastic member, and a tape, etc., and the absorptivity wear goods as a continuum are obtained. Then, after preparing the notching section that it should consider as the last gestalt, in order to consider as each goods, cutting is given by the aforementioned cutter. Irrespective of the existence of implementation of online printing, these processes are carried out according to the position where the usual material by which an assembly's is carried out is arranged, and can be especially carried out satisfactory with the usual technology.

[0021] Since this invention gives the printing pattern which can be recognized from the exterior by ink-jet printing, assembles this ink-jet printing further and gives it in a process, it needs the composition of printing material whose recognition is the material in which ink-jet printing is possible, and is attained from the exterior about the material of the absorptivity wear goods with which it is printed in manufacture of the absorptivity wear goods offered with various gestalten. For example, when a polyethylene film is used outside as a backseat of liquid impermeability, it sets. When a thing translucent as a polyethylene film is used possible [printing on the superficies of a polyethylene film] Printing to the inside of a polyethylene film is possible, and when what wrapped absorptivity material in the absorbent paper in this case further is used, it is also possible to print on the inside or superficies of an absorbent paper, and to make recognition possible from the exterior.

[0022] Moreover, it is also possible to make recognition possible from external surface, when the outer layer sheet of one more or more layers has been arranged on the external surface of a backseat. In this case, a pattern can be separately printed using a sheet translucent as an outer layer sheet in a position which is different in both the 2nd [at least] page, a backseat and an outer layer sheet, and each pattern can also make recognition possible from the exterior. As an outer layer sheet, a nonwoven fabric sheet etc. is usable and it is possible to also make a flexible elastic member pinch among both sheets using the nonwoven fabric sheet which consists of two-layer as an outer layer sheet.

[0023] That is, in the absorptivity wear goods of this invention, if it is possible to make recognition possible from the exterior of absorptivity wear goods, to which member ink-jet printing is given may choose any of the backseat of liquid permeability, the absorbent paper which wraps in absorptivity material, and an outermost-layer-of-drum sheet, and it can be printed to two or more members, and recognition of it can also be enabled from the exterior, respectively.

[0024] Moreover, in this invention, extend a backseat and an outermost-layer-of-drum sheet from the edges-on-both-sides section of absorptivity material, and the side flap section is formed. Consider as the absorptivity wear goods of the gestalt which arranged the fastener for fixation in the side flap section, or In order to consider as the absorptivity wear goods which were made to join beforehand the sides faced at the side flap section order body time, and were formed in the trousers type or to prevent the gap at the time of wear, you may arrange the flexible elastic member to circumference opening of a biped, or circumference opening of the waist.

[0025] Moreover, especially as ink used for ink-jet printing in this invention, although not limited, selection by the material used as the object which prints is also required. If a pigment or a color is distributed in a liquid to the polyethylene film and nonwoven fabric which are used as a material of a backseat or an outer layer sheet, it is usable and selection of the hot-melt type ink distributed in the thing distributed underwater or in the solvent and ordinary temperature in a wax which serves as a liquid at the time of heating even if it was a solid-state is also possible. A wax type is good especially when printing to a nonwoven fabric.

[0026] [Example] this invention is explained in detail below with reference to the drawing in which the example of this invention is shown. Drawing 1 is the perspective diagram showing absorptivity wear ***** beforehand formed in the trousers type in the example of this invention. the later self which the absorptivity wear goods 1 of this invention shown in drawing 1 have the circumference opening 2 of a foot, and the circumference opening 3 of the waist, and was formed by being prolonged between the aforementioned circumference openings of a foot on either side -- time -- 4 and past time -- 5 -- a side seam 6 -- adhesion synizesis -- it carries out -- having -- **** -- a trousers type configuration -- having -- later self -- time -- the printing pattern 7 which can recognize from the exterior at the time of wear to 4

[0027] the side seam 6 of the absorptivity wear goods 1 of this invention in which drawing 2 was shown by drawing 1 -- open

expansion -- carrying out -- elongating -- later self -- time -- 4 -- setting -- a direction parallel to the circumference opening 3 of the waist -- having cut -- a state -- being shown -- a cross section -- it is . The absorptivity wear goods 1 consist of the top sheet 8 of liquid permeability, a liquid impermeability backseat 9, and an absorber 10 arranged among both [these] sheets, the absorber 10 is in contact with the top sheet 8 of liquid permeability with the liquid impermeability backseat 9 through the absorbent paper 12 again through the absorbent paper 11, and the printing pattern 7 which can be recognized from the exterior is given by ink-jet printing between the backseat 9 of liquid impermeability, and the absorbent paper 12 at the time of wear. In this case, the liquid impermeability backseat 9 is a translucent sheet, and ink-jet printing may be given to the liquid impermeability backseat 9, and may be given to the absorbent paper 12. Moreover, a position is shifted to both fields and the respectively different printing pattern may be given.

[0028] what showed another example to which the printing pattern which can be recognized from the exterior was given by ink-jet printing at the time of wear in the absorptivity wear goods 1 in the example of this invention which showed drawing 3 to drawing 1 or drawing 2 -- it is -- later self -- time -- 4 -- setting -- a direction parallel to the circumference opening 3 of the waist -- having cut -- a state -- being shown -- a cross section -- a part -- it is . The top sheet 8 of liquid permeability [goods / absorptivity wear / 1 / of this invention shown in drawing 3], It consists of a liquid impermeability backseat 9 and an absorber 10 arranged among both [these] sheets, and an absorber 10 minds an absorbent paper 11. The top sheet 8 of liquid permeability, Moreover, it is in contact with the liquid impermeability backseat 9 through the absorbent paper 12, and the printing pattern 7 which can be recognized from the exterior is given to the external surface of the backseat 9 of liquid impermeability by ink-jet printing at the time of wear.

[0029] what showed another example to which the printing pattern which can be recognized from the exterior was given by ink-jet printing at the time of wear in the absorptivity wear goods 1 in the example of this invention which showed drawing 4 to drawing 1 or drawing 2 -- it is -- later self -- time -- 4 -- setting -- a direction parallel to the circumference opening 3 of the waist -- having cut -- a state -- being shown -- a cross section -- a part -- it is . The top sheet 8 of liquid permeability [goods / absorptivity wear / 1 / of this invention shown in drawing 4], It consists of a liquid impermeability backseat 9 and an absorber 10 arranged among both [these] sheets, and an absorber 10 minds an absorbent paper 11. The top sheet 8 of liquid permeability, Are in contact with the liquid impermeability backseat 9 through the absorbent paper 12. moreover, in the outside of the backseat 9 of liquid impermeability The outer layer sheet 14 arranged on the outer layer sheet 13 and outside which have been arranged inside is arranged in this order. A printing pattern is given by ink-jet printing between the outer layer sheet 13 and the outer layer sheet 14, and since the outer layer sheet 14 is translucent, this printing pattern can be recognized from the exterior at the time of wear. The printing pattern may be given to which [of the outer layer sheet 13 and the outer layer sheet 14] side, and a position is shifted to both fields and the respectively different printing pattern may be given. Furthermore, it can also consider as the pattern of process printing by having given and laid the printing pattern of a color different, respectively on top of the outer layer sheet 13 and the outer layer sheet 14, and considering as one pattern.

[0030] Moreover, in the absorptivity wear goods of drawing 4 , one outer layer sheet can be accepted on the outside of the backseat 9 of liquid impermeability, and can be arranged on it, and the printing pattern which can be recognized from external surface can also be given by ink-jet printing between the backseat 9 of liquid impermeability, and an outer layer sheet at the time of wear. In this case, you may give ink-jet printing to which [of the backseat 9 of liquid impermeability, and an outer layer sheet] side by using an outer layer sheet as a translucent sheet. Moreover, a position can be shifted to both fields, a respectively different printing pattern may be given, and it can also consider as the pattern of process printing by printing a color which is different in each field, and piling up.

[0031] Drawing 5 is the side elevation having shown the principle of the facility for setting like the assembler of absorptivity wear goods and performing online printing to the material of the backseat of an absorbent paper and liquid impermeability, and an outer layer sheet in the absorptivity wear goods of this invention. The signal of phases, such as a cutter rotor which the print head of ink-jet printing is arranged between the roll kneaders which convey material, and serves as criteria, (not shown), A control unit can emit a printing command signal with the speed signal detected from the rotational frequency of a roll kneader, and a predetermined printing pattern can be given to a predetermined position. Moreover, you may dry by forming a dryer behind the print head, dryness is sped up, and it is effective for the dirt prevention in non-dried ink.

[0032] Drawing 6 is set like the assembler of absorptivity wear goods to the material of the backseat of an absorbent paper and liquid impermeability, and an outer layer sheet in the absorptivity wear goods of this invention. Although a control unit emits a printing command signal with the speed signal which is the plan of drawing 6 having shown the principle of the facility for performing online printing, and was detected from the roll kneader and a predetermined printing pattern is printed to a position It is shown that a position can be changed arbitrarily, also changes a predetermined printing pattern arbitrarily, and can be set up if needed. That is, it is possible to choose the printing position, a printing pattern, and concentration arbitrarily.

[0033] The liquid permeability nonwoven fabric which consists of polyethylene, polypropylene, polyester, and a synthetic fiber that used other thermoplastics as the raw material as a top sheet of liquid permeability used for the trousers type usage **** diaper of this invention can be used. as the backseat of liquid impermeability -- the polyethylene sheet of liquid impermeability -- desirable -- fine -- it is selectable from what stuck the polyethylene sheet which prepared the hole, the liquid impermeability sheet with the moisture permeability which added and extended the filler to thermoplastics or the sheet of these liquid impermeability, and the nonwoven fabric Moreover, it is required to have moderate visible-ray permeability, in order to enable recognition of the printing pattern given to the inside of a backseat from the purpose of this invention from external surface, and although the rate of addition of the filler to the thermoplastics used as the raw material of a backseat can adjust, a fear of being steamed if moisture permeability is given disappears, and it is more comfortable.

[0034] Moreover, a circumference opening of the waist flexible elastic member can use the flexible elastic body used for the usual usage **** diapers, such as urethane thread and thread rubber, as it is the circumference of a biped, and adhesion fixation of these flexible elastic members is carried out to the predetermined field with hot melt adhesive in circumference opening of a foot, and circumference opening of the waist in the state of extension, respectively.

[0035] In fluff pulp, what used high absorptivity polymer together to the main material is desirable, in addition, as for absorptivity material, mixture and laminated materials, such as absorbent-paper independence or heat weld fiber, are used. Moreover, although it may be desirable to consider as the laminated structure which wrapped the whole in absorbent papers, such as tissue, and a sandglass type or a ** type is sufficient as the configuration of an absorber, fit nature with the better sandglass type is obtained.

[0036] Although an outermost-layer-of-drum sheet, an outer layer sheet, and an inner layer sheet can use the nonwoven fabric which consists of polyethylene, polypropylene, polyester, and a synthetic fiber that used other thermoplastics as the raw material, in order to enable from superficies recognition of the printing pattern given to the inside of a backseat from the purpose of this invention, they need to have moderate visible-ray permeability, and it is good to consider as 10 - 30 g/m² as eyes of a nonwoven fabric.

[0037]

[Effect of the Invention] According to the printing method of this invention, although the printing pattern which can be recognized from the exterior at the time of absorptivity wear goods wear is given by ink-jet printing, since ink-jet printing does not need the printing roll engraved like the conventional gravure or flexographic printing, it becomes possible [printing arbitrarily the pattern pattern according to a product brand name, product size, the usage of a product, and a wearer's taste etc. by all patterns to the member of absorptivity wear goods]. Therefore, while becoming possible to increase the kind of pattern pattern of the absorptivity wear goods put in into 1 packing unit for shipment (packing bag) by the printing method of this invention, a variety of absorptivity wear goods are obtained, and it becomes possible to raise the amenity by the simple nature at the time of a user's use, visual satisfaction, etc.

[0038] Moreover, since it becomes possible to arrange a printing pattern to the arbitrary parts of absorptivity wear goods by giving to the material which sets ink-jet printing like the assembler of each material in the manufacturing process of absorptivity wear goods, and targets it, For example, it becomes easy to arrange a pattern that distinction of the front reverse side is clarified, in a specific position, or to give a pattern that it becomes the standard of fixed positions, such as an adhesive tape which fixes absorptivity wear goods to a wearer's body, approximately at the time of wear.

[0039] Moreover, unlike the case where it assembles rewinding and supplying from a feeder the material rolled round in the shape of [finishing / printing] a roll, application of material is not limited by the printing pattern which correspondence becomes easy and needs in the middle of an assembly when a size substitute etc. is required by setting like the assembler of each material on absorptivity wear goods, and carrying out ink JIETO printing.

[0040] Furthermore, process printing becomes possible by printing the printing pattern of a color which assembles two or more print heads from which the color of ink differs, arranges along with the flow direction of the material of a process, and is different in the same member, or printing and laying the printing pattern of a color different, respectively on top of a separate member. Moreover, wide range printing is also attained by arranging two or more print heads along a direction perpendicular to the flow direction of material.

[Translation done.]